



## SEQUENCE LISTING

<110> Hotten, Gertrud  
Neidhardt, Helge  
Bechtold, Rolf  
Pohl, Jens

<120> GROWTH/DIFFERENTIATION FACTORS OF THE TGF-B FAMILY

<130> 2923-0286

<140> 09/901,556

<141> 1999-09-24

<150> 08/289,222

<151> 1994-08-12

<150> DE P 44 23 190.3

<151> 1994-07-01

<150> EPO 92102324.8

<151> 1992-02-12

<150> PCT/EP93/00350

<151> 1993-02-12

<160> 53

<170> PatentIn version 3.1

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TECH CENTER 1600/2900

JUL 28 2003

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<212> PRT

<213> Homo sapiens

<400> 3

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 20 25 30

Ala Pro Pro Lys Ala Gly Ser Val Pro Ser Ser Phe Leu Leu Lys Lys  
 35 40 45

Ala Arg Glu Pro Gly Pro Pro Arg Glu Pro Lys Glu Pro Phe Arg Pro  
 50 55 60

Pro Pro Ile Thr Pro His Glu Tyr Met Leu Ser Leu Tyr Arg Thr Leu  
 65 70 75 80

Ser Asp Ala Asp Arg Lys Gly Gly Asn Ser Ser Val Lys Leu Glu Ala  
 85 90 95

Gly Leu Ala Asn Thr Ile Thr Ser Phe Ile Asp Lys Gly Gln Asp Asp  
 100 105 110

Arg Gly Pro Val Val Arg Lys Gln Arg Tyr Val Phe Asp Ile Ser Ala  
 115 120 125

Leu Glu Lys Asp Gly Leu Leu Gly Ala Glu Leu Arg Ile Leu Arg Lys  
 130 135 140

Lys Pro Ser Asp Thr Ala Lys Pro Ala Ala Pro Gly Gly Gly Arg Ala

145		150		155		160
Ala Gln Leu Lys	Leu Ser Ser Cys Pro Ser Gly Arg Gln Pro Ala Ser	165		170		175
Leu Leu Asp Val	Arg Ser Val Pro Gly Leu Asp Gly Ser Gly Trp Glu	180		185		190
Val Phe Asp Ile	Trp Lys Leu Phe Arg Asn Phe Lys Asn Ser Ala Gln	195		200		205
Leu Cys Leu Glu	Leu Glu Ala Trp Glu Arg Gly Arg Ala Val Asp Leu	210		215		220
Arg Gly Leu Gly	Phe Asp Arg Ala Ala Arg Gln Val His Glu Lys Ala	225		230		235
Leu Phe Leu Val	Phe Gly Arg Thr Lys Lys Arg Asp Leu Phe Phe Asn	245		250		255
Glu Ile Lys Ala	Arg Ser Gly Gln Asp Asp Lys Thr Val Tyr Glu Tyr	260		265		270
Leu Phe Ser Gln	Arg Arg Lys Arg Arg Ala Pro Leu Ala Thr Arg Gln	275		280		285
Gly Lys Arg Pro	Ser Lys Asn Leu Lys Ala Arg Cys Ser Arg Lys Ala	290		295		300
Leu His Val Asn	Phe Lys Asp Met Gly Trp Asp Asp Trp Ile Ile Ala	305		310		315
Pro Leu Glu Tyr	Glu Ala Phe His Cys Glu Gly Leu Cys Glu Phe Pro	325		330		335
Leu Arg Ser His	Leu Glu Pro Thr Asn His Ala Val Ile Gln Thr Leu	340		345		350
Met Asn Ser Met	Asp Pro Glu Ser Thr Pro Pro Thr Cys Cys Val Pro	355		360		365

Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile Asp Ser Ala Asn Asn  
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Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ser Cys Gly Cys  
 385 390 395 400

Arg

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<213> Homo sapiens

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Met Thr Ser Ser Leu Leu Ala Phe Leu Leu Leu Ala Pro Thr Thr  
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Val Ala Thr Pro Arg Ala Gly Gly Gln Cys Pro Ala Cys Gly Gly Pro  
 20 25 30

Thr Leu Glu Leu Glu Ser Gln Arg Glu Leu Leu Leu Asp Leu Ala Lys  
 35 40 45

Arg Ser Ile Leu Asp Lys Leu His Leu Thr Gln Arg Pro Thr Leu Asn  
 50 55 60

Arg Pro Val Ser Arg Ala Ala Leu Arg Thr Ala Leu Gln His Leu His  
 65 70 75 80

Gly Val Pro Gln Gly Ala Leu Leu Glu Asp Asn Arg Glu Gln Glu Cys  
 85 90 95

Glu Ile Ile Ser Phe Ala Glu Thr Gly Leu Ser Thr Ile Asn Gln Thr  
 100 105 110

Arg Leu Asp Phe His Phe Ser Ser Asp Arg Thr Ala Gly Asp Arg Glu  
 115 120 125

Val Gln Gln Ala Ser Leu Met Phe Phe Val Gln Leu Pro Ser Asn Thr

130		135		140											
Thr 145	Trp	Thr	Leu	Lys	Val 150	Arg	Val	Leu	Val	Leu 155	Gly	Pro	His	Asn	Thr 160
Asn	Leu	Thr	Leu	Ala 165	Thr	Gln	Tyr	Leu	Leu 170	Glu	Val	Asp	Ala	Ser	Gly 175
Trp	His	Gln	Leu 180	Pro	Leu	Gly	Pro	Glu 185	Ala	Gln	Ala	Ala	Cys 190	Ser	Gln
Gly	His	Leu 195	Thr	Leu	Glu	Leu	Val 200	Leu	Glu	Gly	Gln	Val 205	Ala	Gln	Ser
Ser	Val 210	Ile	Leu	Gly	Gly	Ala 215	Ala	His	Arg	Pro	Phe 220	Val	Ala	Ala	Arg
Val 225	Arg	Val	Gly	Gly	Lys 230	His	Gln	Ile	His	Arg 235	Arg	Gly	Ile	Asp	Cys 240
Gln	Gly	Gly	Ser	Arg 245	Met	Cys	Cys	Arg	Gln 250	Glu	Phe	Phe	Val	Asp 255	Phe
Arg	Glu	Ile 260	Gly	Trp	His	Asp	Trp	Ile 265	Ile	Gln	Pro	Glu	Gly 270	Tyr	Ala
Met	Asn	Phe 275	Cys	Ile	Gly	Gln	Cys 280	Pro	Leu	His	Ile	Ala 285	Gly	Met	Pro
Gly	Ile 290	Ala	Ala	Ser	Phe	His 295	Thr	Ala	Val	Leu	Asn 300	Leu	Leu	Lys	Ala
Asn 305	Thr	Ala	Ala	Gly	Thr 310	Thr	Gly	Gly	Gly	Ser 315	Cys	Cys	Val	Pro	Thr 320
Ala	Arg	Arg	Pro	Leu 325	Ser	Leu	Leu	Tyr	Tyr 330	Asp	Arg	Asp	Ser	Asn 335	Ile
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 agtagaggcc tgtgggtgca gttag 265

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 cgagtccaca ccacccacc 139

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<210> 8  
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 <212> DNA  
 <213> Homo sapiens



<400> 8  
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<210> 9

<211> 9

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<400> 9

Met Asn Ser Met Asp Pro Glu Ser Thr  
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<210> 10

<211> 10

<212> PRT

<213> Homo sapiens

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Leu Leu Lys Ala Asn Thr Ala Ala Gly Thr  
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<211> 44

<212> DNA

<213> artificial sequence

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<213> artificial sequence

<220>

<223> adaptor primer

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agaattcgca tgccatgggc gacg

24

<210> 13

<211> 24

<212> DNA

<213> Homo sapiens

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ggctacgccca tgaacttctg cata

24

<210> 14

<211> 24

<212> DNA

<213> Homo sapiens

<400> 14

acatagcagg catgcctggg attg

24

<210> 15

<211> 23

<212> DNA

<213> Homo sapiens

<400> 15

cttgagtacg aggctttcca ctg

23

<210> 16

<211> 24

<212> DNA

<213> artificial sequence

<220>

<223> nested adaptor primer

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attcgcatgc catggtcgac gaag

24

<210> 17

<211> 23

<212> DNA

<213> Homo sapiens

<400> 17

ggagcccacg aatcatgcag tca

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<211> 23

<212> DNA

<213> Homo sapiens

<400> 18

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23

<210> 19

<211> 20

<212> DNA

<213> Homo sapiens

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ccagcagccc atccttctcc

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<210> 20

<211> 24

<212> DNA

<213> Homo sapiens

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tccagggcac taatgtcaaa cacg

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<210> 21

<211> 24

<212> DNA

<213> Homo sapiens

<400> 21

actaatgtca aacacgtacc tctg

24

<210> 22

<211> 102

<212> PRT

<213> Homo sapiens

<400> 22

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Asp	Trp	Ile	Ile	Ala	Pro	Leu	Glu	Tyr	Glu	Ala	Phe	His	Cys	Glu	Gly
		20						25					30		

Leu	Cys	Glu	Phe	Pro	Leu	Arg	Ser	His	Leu	Glu	Pro	Thr	Asn	His	Ala
	35						40					45			

Val	Ile	Gln	Thr	Leu	Met	Asn	Ser	Met	Asp	Pro	Glu	Ser	Thr	Pro	Pro
	50					55					60				

Thr	Cys	Cys	Val	Pro	Thr	Arg	Leu	Ser	Pro	Ile	Ser	Ile	Leu	Phe	Ile
65					70					75					80

Asp	Ser	Ala	Asn	Asn	Val	Val	Tyr	Lys	Gln	Tyr	Glu	Asp	Met	Val	Val
			85						90					95	

Glu	Ser	Cys	Gly	Cys	Arg
			100		

<210> 23

<211> 101

<212> PRT

<213> Homo sapiens

<400> 23

Cys Lys Arg His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn  
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Asp Trp Ile Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly  
20 25 30

Glu Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala  
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp  
65 70 75 80

Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val Val Glu  
85 90 95

Gly Cys Gly Cys Arg  
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<210> 24

<211> 101

<212> PRT

<213> Homo sapiens

<400> 24

Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn  
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly  
20 25 30

Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala

35

40

45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala  
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp  
65 70 75 80

Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu  
85 90 95

Gly Cys Gly Cys Arg  
100

<210> 25

<211> 102

<212> PRT

<213> Homo sapiens

<400> 25

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln  
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Phe Tyr Cys Asp Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Phe Pro Asp His Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95

Arg Ser Cys Gly Cys His  
100

<210> 26

<211> 102

<212> PRT

<213> Homo sapiens

<400> 26

Cys Arg Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln  
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Asp Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80

Asp Asp Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95

Arg Ala Cys Gly Cys His  
100

<210> 27

<211> 102

<212> PRT

<213> Homo sapiens

<400> 27

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln  
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly

20

25

30

Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala  
 35 40 45

Ile Val Gln Thr Leu Val His Phe Ile Asn Pro Glu Thr Val Pro Lys  
 50 55 60

Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe  
 65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
 85 90 95

Arg Ala Cys Gly Cys His  
 100

<210> 28

<211> 106

<212> PRT

<213> Homo sapiens

<400> 28

Cys Cys Arg Gln Glu Phe Phe Val Asp Phe Arg Glu Ile Gly Trp His  
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Asp Trp Ile Ile Gln Pro Glu Gly Tyr Ala Met Asn Phe Cys Ile Gly  
 20 25 30

Gln Cys Pro Leu His Ile Ala Gly Met Pro Gly Ile Ala Ala Ser Phe  
 35 40 45

His Thr Ala Val Leu Asn Leu Leu Lys Ala Asn Thr Ala Ala Gly Thr  
 50 55 60

Thr Gly Gly Gly Ser Cys Cys Val Pro Thr Ala Arg Arg Pro Leu Ser  
 65 70 75 80

Leu Leu Tyr Tyr Asp Arg Asp Ser Asn Ile Val Lys Thr Asp Ile Pro  
 85 90 95



Asp Met Val Val Glu Ala Cys Gly Cys Ser  
100 105

<210> 29

<211> 106

<212> PRT

<213> Homo sapiens

<400> 29

Cys Cys Lys Lys Gln Phe Phe Val Ser Phe Lys Asp Ile Gly Trp Asn  
1 5 10 15

Asp Trp Ile Ile Ala Pro Ser Gly Tyr His Ala Asn Tyr Cys Glu Gly  
20 25 30

Glu Cys Pro Ser His Ile Ala Gly Thr Ser Gly Ser Ser Leu Ser Phe  
35 40 45

His Ser Thr Val Ile Asn His Tyr Arg Met Arg Gly His Ser Pro Phe  
50 55 60

Ala Asn Leu Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser  
65 70 75 80

Met Leu Tyr Tyr Asp Asp Gly Gln Asn Ile Ile Lys Lys Asp Ile Gln  
85 90 95

Asn Met Ile Val Glu Glu Cys Gly Cys Ser  
100 105

<210> 30

<211> 105

<212> PRT

<213> Homo sapiens

<400> 30

Cys Cys Arg Gln Gln Phe Phe Ile Asp Phe Arg Leu Ile Gly Trp Asn

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Ser Cys Pro Ala Tyr Leu Ala Gly Val Pro Gly Ser Ala Ser Ser Phe	35	40	45
His Thr Ala Val Val Asn Gln Tyr Arg Met Arg Gly Leu Asn Pro Gly	50	55	60
Thr Val Asn Ser Cys Cys Ile Pro Thr Lys Leu Ser Thr Met Ser Met	65	70	75
Leu Tyr Phe Asp Asp Glu Tyr Asn Ile Val Lys Arg Asp Val Pro Asn	85	90	95
Met Ile Val Glu Glu Cys Gly Cys Ala	100	105	

<210> 31

<211> 105

<212> PRT

<213> Homo sapiens

<400> 31

Cys His Arg Val Ala Leu Asn Ile Ser Phe Gln Glu Leu Gly Trp Glu	1	5	10	15
Arg Trp Ile Val Tyr Pro Pro Ser Phe Ile Phe His Tyr Cys His Gly	20	25	30	
Gly Cys Gly Leu His Ile Pro Pro Asn Leu Ser Leu Pro Val Pro Gly	35	40	45	
Ala Pro Pro Thr Pro Ala Gln Pro Tyr Ser Leu Leu Pro Gly Ala Gln	50	55	60	
Pro Cys Cys Ala Ala Leu Pro Gly Thr Met Arg Pro Leu His Val Arg	65	70	75	80

Thr Thr Ser Asp Gly Gly Tyr Ser Phe Lys Tyr Glu Thr Val Pro Asn  
85 90 95

Leu Leu Thr Gln His Cys Ala Cys Ile  
100 105

<210> 32

<211> 36

<212> DNA

<213> artificial sequence

<220>

<223> OD PCR amplification primer

<400> 32  
atgaattccc atggacctgg gctggmakga mtggat

36

<210> 33

<211> 22

<212> DNA

<213> Homo sapiens

<400> 33  
acgtgggggtg gaatgactgg at 22

<210> 34

<211> 22

<212> DNA

<213> Homo sapiens

<400> 34  
atattggctg gactgaatgg at 22

<210> 35

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<212> DNA  
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 atgtgggctg gaatgactgg at 22

<210> 36  
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 aggacctcgg ctggaagtgg at 22

<210> 38  
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 <400> 38  
 gggatctagg gtggaaatgg at 22

<210> 39  
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